

Republic of Korea: Selected Issues

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REPUBLIC OF KOREA

Selected Issues

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Approved by the Asia and Pacific Department

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I. COUNTER-CYCLICAL FISCAL POLICY—DOES IT WORK IN KOREA’S OPEN ECONOMY?¹

A. Introduction

1. **The spillovers from the ongoing global financial turmoil and economic downturn have triggered fiscal policy responses in a number of countries.** This has reignited the long-standing debate among economists about the ability of fiscal policy to help stabilize economic cycles.
2. **Supporters of an active role for fiscal policy suggest that economies lack an efficient mechanism to return to full potential.** Critics, on the other hand, argue that economic agents will offset the impact of fiscal policy on aggregate demand through changes in their saving behavior (so-called Ricardian equivalence). A middle-of-the-road view holds that fiscal policy can be effective provided certain conditions hold, including sound macroeconomic fundamentals, nominal wage and price stickiness, and/or economic agents with finite horizons and liquidity constraints.
3. **The paper will evaluate the size of fiscal multipliers in Korea using the IMF’s Global Integrated Monetary and Fiscal (GIMF) model calibrated for Korea.**² The sensitivity of the results to a number of key factors is also explored. Based on this, the impact of the recent fiscal stimulus packages is estimated and the appropriateness of the current mix of measures is assessed. In this context, the paper also draws on international operational experience with fiscal stimulus measures.
4. **The paper is organized as follows:** Section B discusses cross-country studies on the effectiveness of counter-cyclical fiscal policy; Section C will briefly introduce the macroeconomic model used and present simulation results for Korea; Section D discusses the role for counter-cyclical fiscal policy in the current downturn; and Section E concludes.

B. Cross-Country Evidence on the Counter-Cyclical Role of Fiscal Policy

5. **The question of the effectiveness of fiscal policy is ultimately empirical.** There is a vast literature on this topic. Studies generally support the role for counter-cyclical measures, but evidence on the size of fiscal multipliers varies with the analytical approach:
 - **Event-studies** give mixed results. The 2001 income tax rebates in the United States are generally considered to have been effective in boosting domestic demand, although the impact on output was relatively small with multipliers well below

¹ Prepared by Leif Lybecker Eskesen. For more details and analysis, please see forthcoming IMF working paper “Countering the Cycle—The Effectiveness of Fiscal Policy in Korea” by the same author.

² I would like to thank Dirk Muir for his invaluable help explaining the workings of the GIMF model.

1 (Shapiro and others, 2002, 2003). The 1995 stimulus package in Japan is estimated to have been successful, but it did not have a lasting impact on economic activity (Posen, 1998 and Mühleisen, 2000). Finland's response to the 1991 output shock, by letting automatic stabilizers operate fully, is considered to have been largely ineffective because it raised concerns about fiscal sustainability (Corsetti and Roubini, 1996). The IMF *World Economic Outlook* (October 2008) provides evidence that the size of public debt and composition of fiscal stimulus could be important determinants of the effect of fiscal policy.

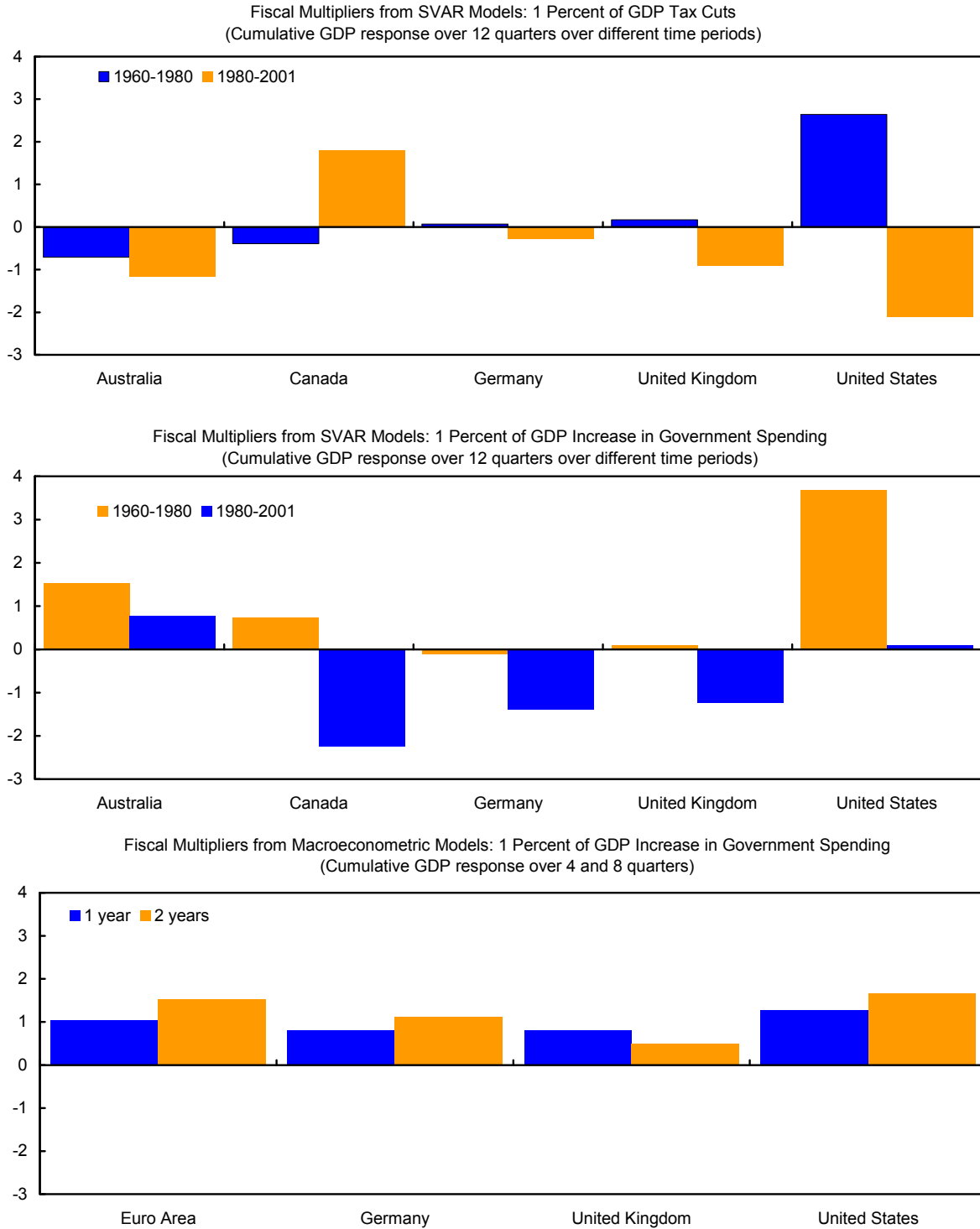
- Studies on advanced economies using *vector autoregression (VAR) methods* conclude that fiscal multipliers have declined over time and, in some cases, may even have been negative (see Perotti, 2005 for an overview). These results (Figure I.1), which differ widely across countries, likely reflect (i) increasing leakage through the trade channel due to higher openness of economies; (ii) a decline in the share of liquidity-constrained households due to better access to credit; and (iii) a sharper focus of monetary policy on price stability. Studies for Korea show that multipliers are small and short-lived (see Hur, 2005 for a review of Korean studies and Zebregs, 2003).
- Estimates from *macro models*, on the other hand, show that fiscal policy can be quite effective (Figure I.1). Impact multipliers are in the range of 0.3–1.2 percent and expenditure measures appear to have a larger effect than tax measures (Hemming and others, 2002, Botman, 2006). IMF *World Economic Outlook* (October 2008) finds that government investment has the largest impact on economic activity and inflation. However, the size of the estimated multipliers depends on assumptions about, among others, the monetary regime, labor supply elasticities, and the pervasiveness of liquidity constraints.

Generally, the cross-country evidence suggests that the success of fiscal policy is contingent on a number of factors. First, the fiscal response needs to be *well timed*. This will, in particular, reinforce the effectiveness of fiscal policy in countries with short implementation lags and/or large automatic stabilizers. Second, *strong fundamentals*, including macroeconomic stability and fiscal sustainability, will strengthen multiplier effects by lowering any possible offsets from precautionary savings. Finally, fiscal measures need to be *well targeted* to ensure the largest possible demand impact.

C. The Counter-Cyclical Role of Fiscal Policy in Korea

6. **This section will assess the effectiveness of counter-cyclical fiscal policy in Korea based on simulations using a multi-country macroeconomic model.** Specifically, fiscal multipliers for different revenue and expenditure measures are estimated and their sensitivity

Figure I.1. Fiscal Multipliers from Structural VAR and Macroeconometric Models—Cross-Country Evidence 1/



Source: Perotti (2005).

1/ VAR stands for vector autregression.

to underlying assumptions is explored. Moreover, the complementary role of monetary policy and benefits of coordinated global fiscal stimulus are also analyzed.

7. **Using a macroeconomic model has the advantage that the results are underpinned by economic theory**, although the results are still sensitive to the imposed restrictions and assumptions. For the purpose of this paper, the IMF's Global Integrated Monetary and Fiscal (GIMF) model is used.

8. **GIMF is an open economy general equilibrium model based on household and firm optimizing behavior in a multi-country setting.** It was developed at the IMF and is documented in Kumhof and Laxton (2007). It integrates domestic supply, demand, trade, and international asset markets in a single theoretical framework. This allows for a rich set of transmission mechanisms. Households are assumed to have finite planning horizons and some are liquidity constrained. Together with other assumptions, this allows for non-Richardian effects of fiscal policy. Firms are managed in accordance with the preferences of their owners, the myopic overlapping generation households. Therefore, they also have finite planning horizons. A fiscal policy reaction function is applied and the government is assumed to target a balanced structural budget. Monetary policy is in the new-Keynesian tradition, with a number of nominal and real rigidities that allow for real effects on the economy in the short to medium run. Moreover, monetary policy is guided by a stylized Taylor-type interest rate reaction function.

9. **The model is calibrated for two countries, Korea and the rest of the world, and is on an annual basis.** The model is calibrated to reflect different features of the Korean economy and policy preferences, including (i) demand and supply side characteristics; (ii) trade structure; (iii) external position and composition of fiscal revenues and expenditures; (iv) fiscal and monetary reaction functions; and, finally, (v) structural parameters for household preferences and firm technology. Much of the input used for the model calibration draws on N'Diaye, Zhang, and Zhang (2008), Kumhof and Laxton (2007), and author estimates and assumptions.

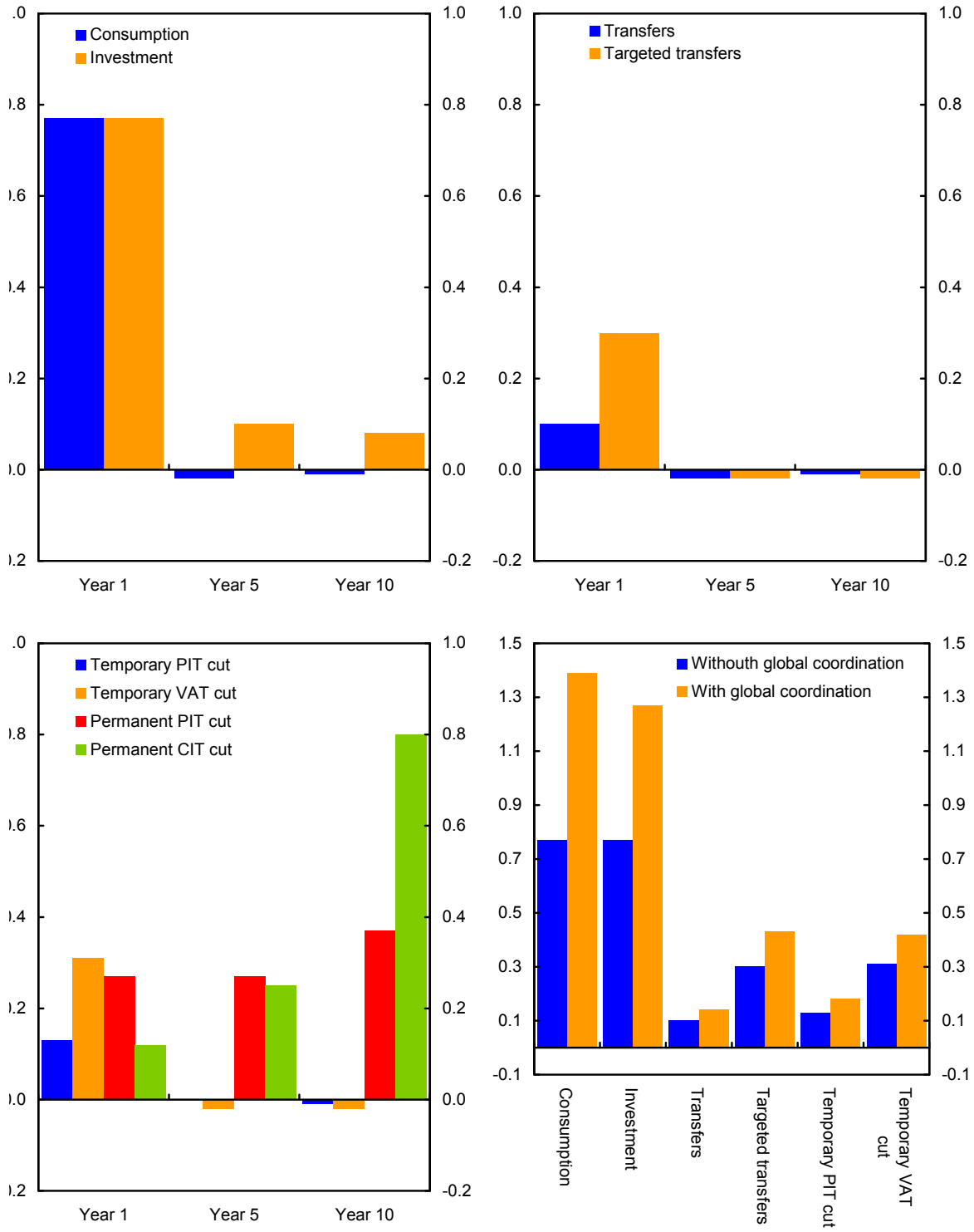
Results from Fiscal Stimulus Simulations

10. **A number of stimulus measures and sensitivity analyses are simulated to derive fiscal multipliers.** These simulations are stylized representations of reality and do not consider some of the practical constraints that policy makers may face, including the lag structure of infrastructure investment projects and political bargaining about measures. Nevertheless, they do give a good sense of the potential growth impact of different fiscal measures, allowing for an assessment of relative effectiveness and overall impact of announced fiscal packages. Moreover, sensitivity analysis can shed light on some of the uncertainties and trade-offs that policymakers will need to consider when designing fiscal stimulus packages.

11. **The simulations focus on both revenue and expenditure measures.** On the revenue side, multipliers for temporary and permanent corporate income, personal income, and indirect taxes are derived. On the expenditure side, the growth impact of hikes in public investment, consumption, and transfers is considered. In each case, the fiscal stimulus is assumed at 1 percent of GDP for one year, except for the permanent cuts in corporate and personal income tax rates. To allow for an assessment of the pure discretionary impact on growth, lump-sum transfers are used to offset the impact of automatic stabilizers. In addition, in the period following the fiscal stimulus, lump-sum transfers adjust gradually to return government debt back to its steady-state value over time. The results are presented below and in Figure I.2:

- **Investment and consumption.** A 1 percent of GDP temporary increase in government investment and consumption is estimated to increase growth in Korea by around 0.8 percentage points in the first year compared to the baseline without any fiscal stimulus. Over time, the impact on growth from the increase in investment will have the largest impact due to the positive spillovers on household spending as income increases (due to higher investment) and as wealth increases due to the higher productivity of the economy.
- **Income transfers.** General income transfers are found to have a low immediate impact on Korea's GDP the first year (0.1 percent) owing both to the leakage through higher imports and the poor targeting (i.e., the transfers are also given to well-off households with a low propensity to consume out of these transfers). If instead the 1 percent of GDP payout is targeted only at liquidity-constrained households, the impact triples despite the leakage, clearly demonstrating the importance of focusing transfers on low-income households.
- **Taxes.** A temporary cut in either the personal income tax (PIT) or corporate income tax (CIT) would have a very small impact on growth in the crisis year (0.1–0.15 percent). Like general income transfers, this is due to the poor targeting and the large import content of any associated increase in private consumption or investment. A temporary cut in the value-added tax, on the other hand, gives rise to a much stronger impact on growth in the first year (0.33 percent) as consumers are given the incentive to bring forward consumption while the tax cut lasts. Implementing a permanent cut in the PIT or CIT results in higher multipliers than temporary cuts. This is because it gives rise to a permanent shift in income and, therefore, a stronger consumption and investment response. In the first year, a cut in the PIT has the largest impact (0.27), more than twice the impact from a CIT cut and almost matching the effect of a temporary VAT cut. This is because a cut in the PIT has an immediate positive impact through higher consumption by liquidity-constrained households. However, the CIT impact is more persistent and rising as it spurs investment. Among the fiscal measures available, government

Figure I.2. Korea: Cumulative Fiscal Multipliers in the Base Case
 (Impact on real GDP from 1 percent of GDP stimulus in year 1 unless otherwise specified)



Source: IMF staff estimates.

consumption and investment are clearly found to be most effective as short-term, counter-cyclical tools. However, targeted transfers and a temporary cut in the VAT are also relatively effective in spurring growth immediately.

12. **The multipliers for Korea are generally smaller compared to the rest of the world.** This, to a large extent, reflects the more open nature of the Korean economy and, consequently, leakages through the trade channel. However, in the event of a simultaneous stimulus in the rest of the world, the multipliers for Korea increase significantly as the fiscal stimulus abroad translates into increased Korean exports of consumption and investment goods (Figure I.2). In turn, this demonstrates the importance of coordinating counter-cyclical policy in an increasingly interconnected global economy.

13. **Sensitivity analysis demonstrates the importance of complementary macroeconomic policies, household income structures, and fiscal credibility considerations (Figure I.3).**

- **Complementary monetary policy.** In the base case presented above, the central bank is assumed to respond to the increase in activity and inflation from the stimulus measures by raising interest rates, partly countering the initial stimulus. Assuming instead that monetary policy is accommodative during the crisis year and interest rates are left unchanged, the growth impact from the fiscal measures increases notably in the short term. This difference is, however, eliminated in the following years due to the higher level of inflation, leaving policymakers with a trade-off.
- **Degree of liquidity constraints.** The share of liquidity-constrained households assumed in the base case may be too low in the event of a more severe economic downturn. As unemployment rises and banks tighten credit standards during the downturn, more households could find themselves liquidity constrained. Therefore, if the share of liquidity-constrained households in Korea instead was assumed to be 50 percent, the multipliers for all fiscal measures would be larger. In particular, the impact from income transfers or personal income tax cuts would be higher as a relatively larger share of the beneficiaries would spend the entire increase in their disposable incomes.
- **Rising risk premium.** A significant fiscal stimulus could spark concerns about fiscal credibility and broader macroeconomic concerns, which could be reflected in the assignment of a higher risk premium on a country. If it assumed that the foreign exchange risk premium rises by 1 percentage point and the credit spread on private sector debt increases by 0.5 percentage points, it will reduce the impact of the temporary fiscal stimulus for Korea quite significantly, in the short and especially the medium term. Indeed, in the medium term the residual positive impact on GDP from a temporary government investment shock is more than countered by the

Figure I.3. Korea: Cumulative Fiscal Multiplier Sensitivity Analysis
 (Impact on real GDP from 1 percent of GDP stimulus in year 1, unless otherwise specified)



Source: Staff estimates.

adverse impact of the higher risk premiums, primarily through weaker investment. In turn, this underscores the importance of signaling continued commitment to fiscal prudence, as the Korean authorities have demonstrated in the past, especially during times of fiscal loosening.

D. Korea's Counter-Cyclical Response to the Current Crisis

14. **Korea has taken decisive steps to counter the fallout on the economy from the global economic slump.** The government introduced two fiscal packages in 2009, with the original budget and the supplementary budget, totaling 3.6 percent of GDP:

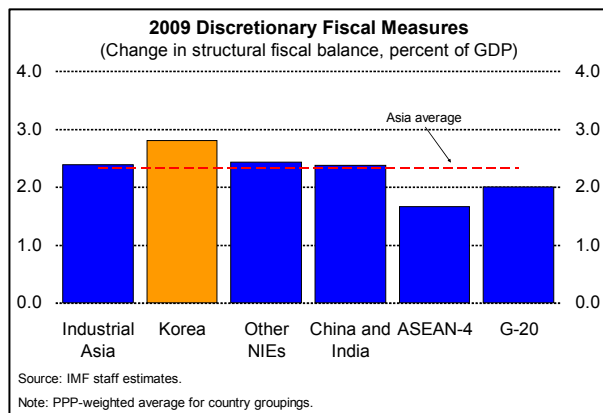
- Around a quarter of the package consists of revenue measures, primarily permanent cuts in the PIT and CIT rates. The PIT tax brackets will be cut by a cumulative 2 percentage points in 2009 and 2010 from 8–35 percent to 6–33 percent. The tax rate for the lowest tax bracket will be reduced by the full 2 percentage points in 2009. Moreover, per-person deductions were increased. Further to this, the lowest CIT rates will be reduced by 3 percentage points (13 percent to 10 percent) and the highest rates by 5 percentage points (25 percent to 20 percent) by 2010. Moreover, CIT tax brackets were doubled.

Fiscal Stimulus Packages (In percent of GDP)		
	2009	2010
Revenue measures	-1.0	-1.2
Permanent tax cuts	-0.7	-1.0
Temporary measures	-0.3	-0.2
Expenditure measures	2.6	...
2009 revised budget	1.0	...
SOC expansion in regional areas	0.4	...
Support for SMEs and self-employed	0.3	...
Support for low-income households	0.1	...
Local government support	0.1	...
Other	0.1	...
2009 supplementary budget	1.7	...
Support for low-income households	0.4	...
Support for SMEs and self-employed	0.4	...
Support for employment	0.3	...
Local government support	0.3	...
Green growth and other investment spending	0.2	...
Total	3.6	1.2

Sources: Authorities and staff estimates.

- The remainder of the stimulus measures (75 percent) comprises higher expenditure measures, consisting primarily of income support for low-income households, active-labor market policies, support for SMEs, and investment spending.

Reflecting this, the overall fiscal balance is expected to switch to a deficit of around 3 percent of GDP in 2009 and the discretionary fiscal impulse (measured as the change in the structural fiscal balance) is estimated at 2¾ percent of GDP, which is high by G-20 and Asian standards. The change in the structural balance is smaller than the size of the announced fiscal stimulus packages. This partly reflects the fact that the automatic transfers from central to local governments tied to tax collections were expected to decline in 2009 due to



the slowdown and, therefore, were replaced by increased lending to local governments. The increased lending can be considered as discretionary spending and was, consequently, part of the announced fiscal stimulus packages. However, it does not effectively represent additional spending compared to the spending envelope of 2008, but rather a switch between central government spending categories.

15. **The results from the GIMF simulations clearly show that fiscal policy in Korea can be effective as a counter-cyclical tool.** This supports the authorities' decision to rely heavily on fiscal policy as a key line of defense against the adverse economic spillovers from the global economic and financial turmoil. Moreover, Korea's relatively favorable fiscal position provides the authorities ample room to loosen fiscal policy during this downturn.

16. **Given Korea's relatively small automatic stabilizers and the magnitude of the slowdown, a counter-cyclical response had to rely on discretionary measures.**³ However, Korea benefits from relatively short fiscal implementation lags, which have allowed for a fast discretionary response to the weakening economic conditions. This was evident from the positive impetus to GDP growth from public consumption and construction investment during the first quarter of this year.

17. **The authorities' fiscal response has also fulfilled many of the prerequisites for effective discretionary policy.** The fiscal stimulus was *timely* and it was *significant* in size, which was crucial given both the depth of the slowdown and considerable uncertainty surrounding the outlook. However, given the introduction of *permanent* tax cuts, the objective of keeping stimulus *temporary* was not fully achieved. In light of the protracted nature of the slowdown, the fiscal stimulus will likely have to be *prolonged*, so it will be important for the authorities to stand ready to do introduce more temporary measures if needed in 2010. It is also important that they clearly signal the readiness to do more to help allay uncertainties about the outlook, thereby lessening precautionary saving motives of corporates and households.

18. **While there is no "magic formula" for the right mix of fiscal stimulus measures, the GIMF simulations and international operational experience suggest a number of general lessons:**

- *Revenue measures:* A lowering of personal and corporate income, dividend, and capital gains taxation is often effective in more normal circumstances, but may be less effective when economic conditions are weak because of the likely significant cyclical decline in the relevant tax bases. Personal income tax credits, on the other

³ Korea does not have a comprehensive unemployment benefit scheme and corporate taxes are assessed on previous year's income.

hand, can be effective through fast and targeted distribution. To foster intertemporal substitution, a possibility is to introduce a temporary tax credit on new investment. A temporary reduction in consumption taxes can also be effective by bringing forward private consumption, which was confirmed by the GIMF simulations.

- *Expenditure measures:* By international experience, frontloading existing investment projects and stepping up maintenance spending tend to have a more immediate impact on demand. This was demonstrated in the GIMF simulations, which also highlighted the longer-term benefits from higher investments through secondary multipliers. Targeted cash transfers can quickly be disbursed and support the neediest with the highest propensity to consume and who are most at risk during a downturn. Taking steps to further expand social safety nets can also help lessen the precautionary savings of households. However, such measures take time to implement and could serve more as a medium term objective.

In light of this, the mix of the fiscal stimulus measures introduced in Korea in response to the current economic crisis has been broadly appropriate. The stimulus focused mostly on spending measures, including spending with a potential large near-term impact on growth, such as investment spending and transfers to liquidity constrained agents. However, the corporate and personal income tax cuts are not expected to have a large impact on growth in the short term, although they can help support the recovery once it is under way. Assuming that the change in the structural fiscal balance represents the same relative mix of measures announced in the fiscal packages, the model-generated multipliers suggest that the impact on growth in 2009 could be around 1–1½ percentage points. Nevertheless, it should be kept in mind that this assumes that the fiscal measures are fully implemented this year, with transfers in the hands of consumers, capital projects carried out, and so on.

E. Concluding Remarks

19. **The analysis in this paper shows that fiscal policy can be effective as a stabilization tool for Korea, despite the openness of the economy.** Simulations using a macroeconomic model calibrated for Korea point to a number of key lessons:

- Multipliers differ across fiscal measures—they are larger for infrastructure spending, consumption, and transfers targeted at liquidity-constrained agents. These measures should, therefore, figure prominently in stimulus packages, as they have in Korea. That said, the tax cuts included in Korea’s fiscal stimulus packages are not expected to have a significant short-term impact on growth and, given their permanent nature, will make it more difficult to achieve the needed fiscal consolidation over the medium term.

- The impact of the fiscal stimulus is relatively short-lived and an expansionary fiscal stance will need to be maintained if the recovery is weak and drawn out, as the staff expect, both for Korea's and the global economy.
- The effectiveness of fiscal stimulus can be strengthened if supported by complementary monetary policy, although this may involve some tradeoff between inflation and growth. The simultaneous easing of monetary policy in Korea has likely strengthened the impact of the fiscal stimulus, but not at the expense of the inflation target given the significant widening of the output gap.
- Concerns about fiscal sustainability can impair the effectiveness of short-term fiscal stimulus by raising precautionary savings and risk-premiums. Therefore, it is important, even during a crisis, to signal commitment to fiscal sustainability, including by articulating medium-term fiscal consolidation plans.
- Given global economic interconnectedness, a globally coordinated fiscal response helps boost fiscal multipliers, especially for an open economy such as Korea's.

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II. THE IMPACT OF THE GLOBAL RECESSION ON KOREA'S CORPORATE SECTOR¹

A. Introduction

1. **The Korean economy has been hit by an external shock of unprecedented proportions, which could have significant implications for the corporate sector and, by implication, the banking sector.** Korea experienced a sudden reversal in capital flows that was greater than during the Asian crisis and exceptional by international standards. Shortly thereafter, Korea experienced its largest collapse in exports and industrial production on record. Even though the corporate sector entered the crisis in a relatively strong position, the magnitude of the shock will likely lead to widespread bankruptcies and adversely affect the banking system.
2. **This chapter uses contingent claims analysis to assess the vulnerabilities of the Korean corporate sector.** In essence, this approach extracts information on potential bankruptcies from companies' stock prices and balance sheet data. The chapter finds that creditor losses from corporate defaults could amount to 4–6 percent of GDP. While this is not sufficient to trigger widespread banking distress, it is indicative of significant corporate weaknesses, particularly in the small and medium-sized enterprise (SME) sector. These weaknesses need to be addressed to ensure a sound and lasting recovery.
3. **The chapter is structured as follows.** The next section describes the impact of the global crisis on real and financial conditions in Korea, presents some aggregate indicators of corporate health, and identifies pockets of particular vulnerability in the corporate sector. Section C presents the results of the contingent claims analysis, and Section D concludes with some policy implications.

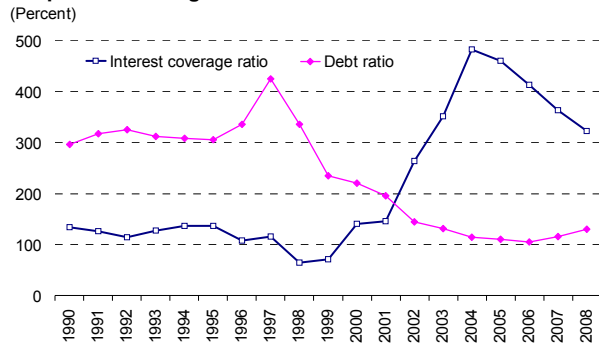
B. The Backdrop

4. **In aggregate, the corporate sector entered the current crisis in a relatively strong position (Figure II.1).**
 - Leverage was drastically reduced after the Asian crisis and the aggregate debt-to-equity ratio fell from 425 percent in 1997 to a low of 105 percent in 2006. While the debt-to-equity ratio rebounded to 130 percent in 2008, it remains low by historical standards. Korean corporates also compare favorably from an international perspective.

¹ Prepared by Erik Lueth. The chapter draws heavily on work done by Papa N'Diaye and Sonali Jain-Chandra for Chapter III of the Asia and Pacific *Regional Economic Outlook* (May 2009).

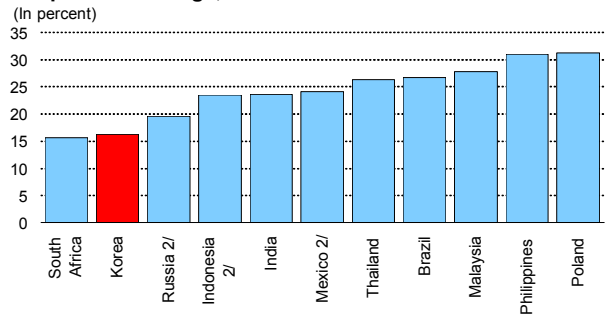
Figure II.1. Korea: Health of the Aggregate Corporate Sector

Corporate Leverage



Source: CEIC Data Company Ltd.

Corporate Leverage, 2008 1/

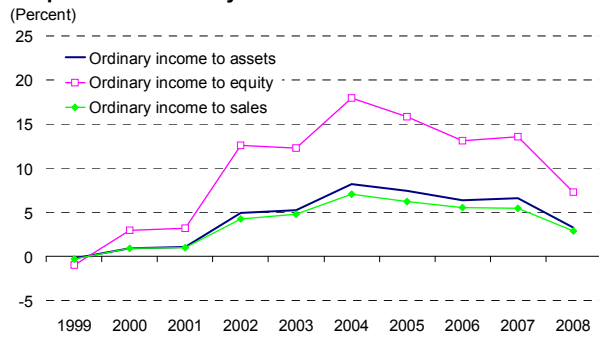


Source: IMF, Corporate Vulnerability Utility.

1/ Debt in percent of assets.

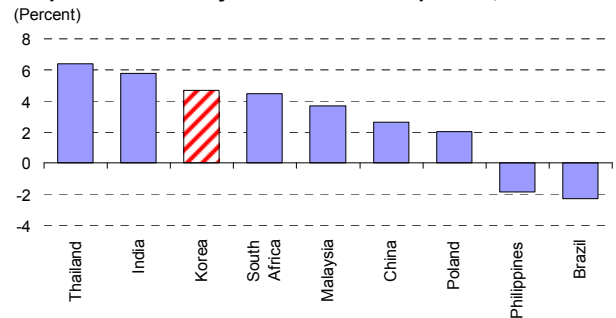
2/ Data refers to 2007.

Corporate Profitability



Source: CEIC Data Company Ltd.

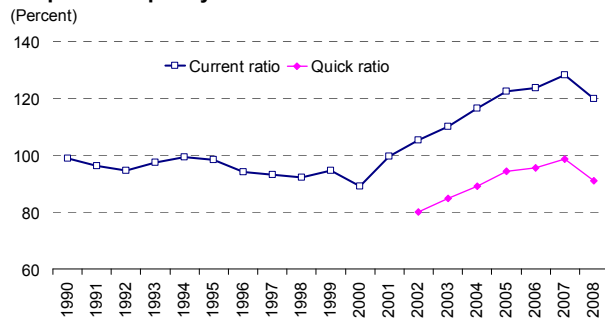
Corporate Profitability: International Comparison, 2008 1/



Source: IMF Research Department, Corporate Vulnerability Utility.

1/ Net income plus interest expense to last year's assets, adjusted for CPI inflation. The sample covers about 80 percent of listed companies, weighted by market capitalization.

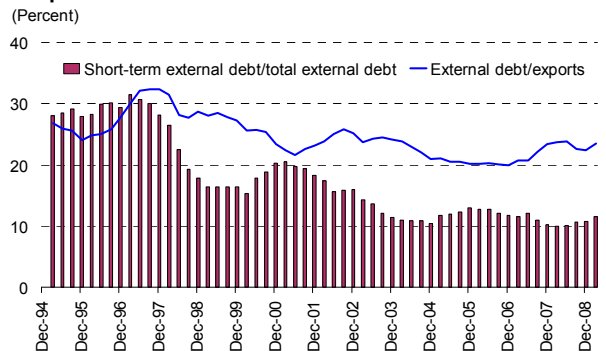
Corporate Liquidity 1/



Source: CEIC Data Company Ltd.

1/ Current ratio=current assets/current liabilities; quick ratio=(current assets-inventory)/current liabilities.

Corporate External Debt



Source: CEIC Data Company Ltd.

Among 11 comparator countries, only South Africa exhibits a lower corporate leverage ratio than Korea. Low leverage should ease roll-over risks and protect cash flow in the event of higher interest rates or lower profits. The latter is illustrated by the interest coverage ratio, which is defined as net income relative to interest expenditure. Mirroring the path of leverage, the interest coverage ratio has surged after the Asian crisis and reached 480 percent in 2004. While it has come down significantly over recent years, it is still well above 300 percent.

- Profitability, while on a declining trend since 2004, is still healthy with ordinary income-to-assets at 3¼ percent and ordinary income-to-equity at 7¼ percent. Again, this compares favorably to other countries. Among nine comparator countries, only Thai and Indian corporates exhibit higher returns-on-assets.
- Liquidity indicators were at an all time high before the crisis broke. For example, the current ratio defined as liquid assets in percent of short-term liabilities, reached close to 130 percent in 2007, and was 120 percent at end-2008. Even after adjusting liquid assets for high inventory levels by looking at the so-called quick ratio, Korean corporates had sufficient liquid assets to deal with sharply lower roll-over rates on their debt.
- Foreign debt has been on a downward trend since the Asian crisis, and after a slight rebound in 2007 now amounts to 25 percent of exports. At this level, drops in the exchange rate should not cause systemic stress in the corporate sector. In fact, for the corporate sector as a whole, gains from exports in the event of a depreciation would outweigh losses stemming from higher debt service. The vulnerability to the global credit crunch and a sharp curtailment of new foreign credit also seems limited; the share of short-term debt in total external debt has fallen from 30 percent in 1997 to 12 percent at end-2008. In absolute terms, short-term external debt of Korean corporates amounts to \$15 billion, compared to \$226 billion in official foreign exchange reserves.

5. **Also, financing conditions, which deteriorated sharply in the immediate aftermath of the Lehman collapse, have eased considerably.** After a cumulative cut of 325 basis points in the policy rate, lending rates fell from a seven-year high of 7.8 percent in October to an all-time low of 5.4 percent in May. Private credit growth, while down from the 15 percent recorded in mid-2008, remains close to 8 percent. Bond spreads of creditworthy companies are back to pre-crisis levels and domestic bond issuance in the first five months of 2009 (relative to GDP) is close to an all-time high. Foreign financing conditions have also improved. After being cut off from global bond markets for several months, Korean corporates issued more than \$5 billion in the first quarter of 2009, or broadly in line with pre-crisis levels.

6. **However, the magnitude of the export shock may still pose a severe challenge, even though the corporate sector looks sound by aggregate standards.** In January 2008, exports were down almost 35 percent year-on-year, the steepest drop on record, and much worse than the 21 percent drop in the wake of the dotcom bubble. While exports have recovered somewhat since January, they were still down 22 percent year-on-year during the first 20 days of July. Industrial production fell 25 percent year-on-year in January, again the largest drop on record and much worse than the 13½ percent drop recorded during the Asian crisis. And despite a recovery this year, it remains 9 percent below the level recorded in May last year.

7. **Moreover, there are pockets of significant vulnerability in the corporate sector that are masked by aggregate data (Figure II.2).**

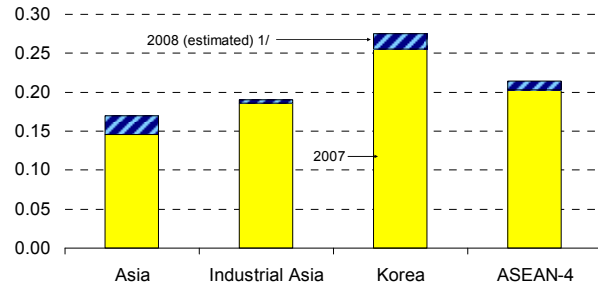
- For a quarter of listed companies, interest payments exceeded net income in 2007 and this share is estimated to have risen further in 2008.² Companies with interest coverage ratios below 1 account for around 8 percent of corporate debt. Companies with interest coverage ratios below 1 are sometimes referred to as technically bankrupt, as they can only stay afloat by tapping into their cash reserves or selling liquid assets.
- SMEs are particularly vulnerable after years of easy credit. They exhibit higher nonperforming loan (NPL) ratios than the average company—2.3 percent versus 1.5 percent—and account for the bulk of corporate bankruptcies. Also, 37 percent of small listed companies (measured in terms of their debt) are estimated to have interest coverage ratios below 1, compared to 30 percent in the ASEAN-4 and 25 percent in industrial Asia.³
- The construction and real estate sector also look overextended. In the latter, the debt ratio amounted to 220 percent at end-2008, compared to an all-industry average of 130 percent. Similarly, and in contrast to the aggregate corporate sector, liquid assets fell short of short-term liabilities by a significant margin. With house prices falling until recently and the stock of unsold homes reaching an all time high in March, the outlook for the sector remains challenging, despite policy measures to support the sector, such as public purchase programs for unsold homes.

² The Worldscope dataset covers some 80 percent of listed companies in Korea.

³ Companies that fall below the median in terms of market capitalization are defined as small; those between the fiftieth and ninetieth percentile are classified as medium, and those above the ninetieth percentile are classified as large.

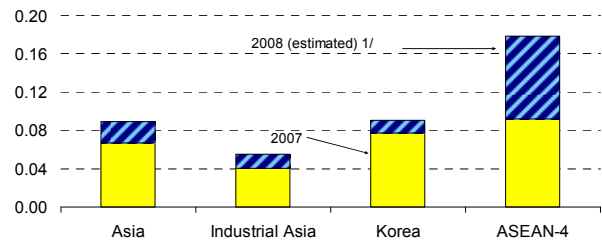
Figure II.2. Korea: Pockets of Corporate Vulnerability

Asia: Share of Firms with Interest Cover Ratios Less than One (Ratio)



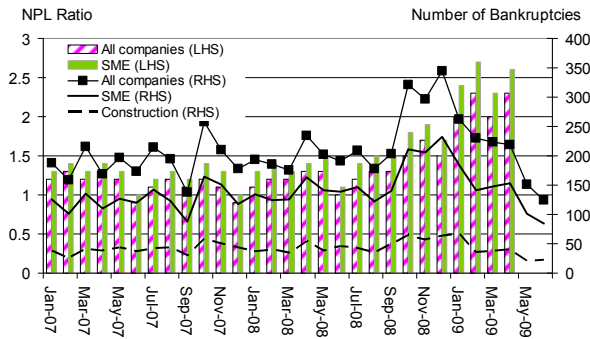
Sources: Worldscope; and IMF staff estimates.
1/ Assuming a 15 percent decline in profits.

Asia: Share of Impaired Debt of Firms with Interest Cover Ratios Less than One (Ratio)



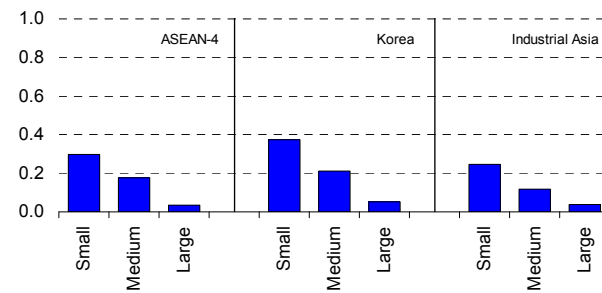
Sources: Worldscope; and IMF staff estimates.
1/ Assuming a 15 percent decline in profits.

Companies in Distress



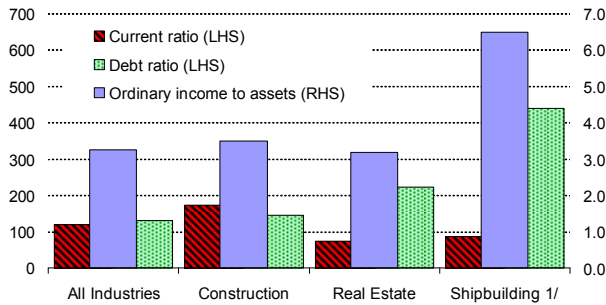
Source: CEIC Data Company, Ltd.

Share of Impaired Debt of Firms with Interest Cover Ratio Less Than One, by Size, 2008 (estimate) (Ratio)



Sources: Worldscope; and IMF staff estimates.

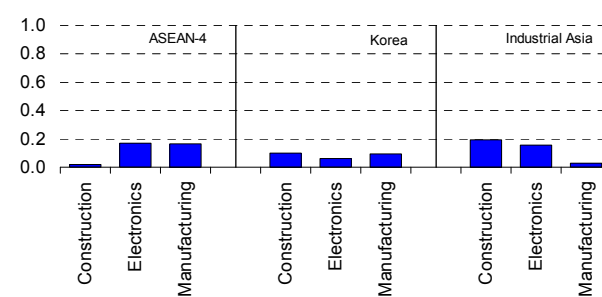
Financial Statement Analysis by Sector (In percent)



Source: CEIC Data Company Ltd.

1/ Manufacturing, Transport Equipment, Excluding Cars.

Share of Impaired Debt of Firms with Interest Cover Ratio Less Than One, by Sector, 2008 (estimate) (Ratio)



Sources: Worldscope; and IMF staff estimates.

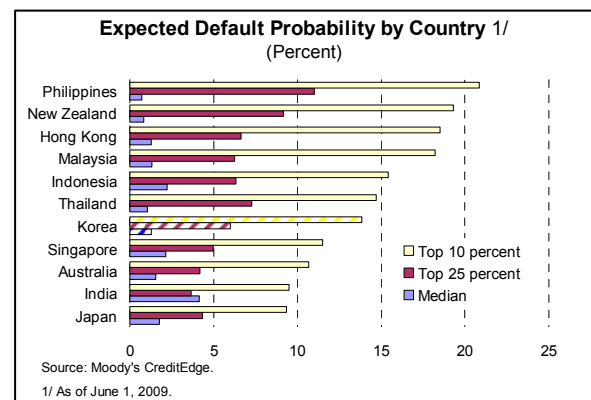
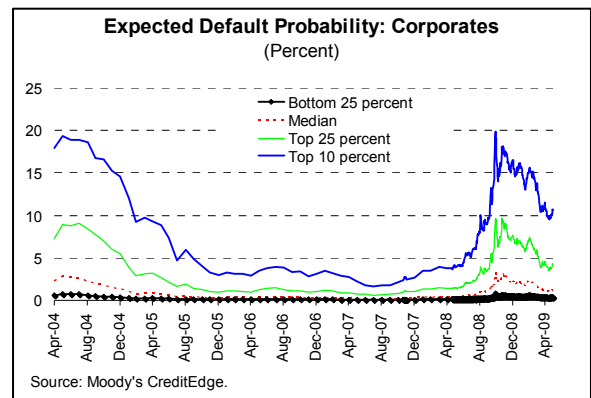
- Finally, many shipbuilders and the shipping industry are under financial stress, reflecting the slump in global trade and the collapse in shipping costs, down 70 percent from the peak in mid-2008. The debt-to-equity ratio of shipbuilders amounts to 440 percent, compared to 130 percent for the corporate sector as a whole.

C. The Projected Impact

8. **This section uses contingent claims analysis to derive the likely impact of the current downturn on Korean corporates and, by extension, the banking system.** Under this approach, the risk of default is related to the probability that the value of a firm's assets will fall below the value of its liabilities. This, in turn, depends on two factors: firm leverage (debt relative to the market value of its equity) and uncertainty about the value of firm assets. Both of these factors are related to share prices, since when stock prices fall, this diminishes the market equity base; and when price volatility increases, this implies growing uncertainty over asset values. Both increase the probability that a firm will default. With this and other information, expected default probabilities one year ahead can be calculated, using the contingent claims framework.⁴ This analysis covers some 80 percent of Korean listed companies, in terms of market capitalization.

9. **Expected default probabilities spiked after the Lehman collapse, but have remained within historical confines.** The default probability of the median firm increased from around 0.2 percent in mid-July 2007 to 3.4 percent in October 2008, before falling back to 1.3 percent more recently. While the change in default probabilities has been striking in terms of abruptness, it has not been exceptional in terms of magnitude. That companies recorded default probabilities comparable to 2004, despite the magnitude of the current shock, is evidence of the corporate sector's relative soundness.

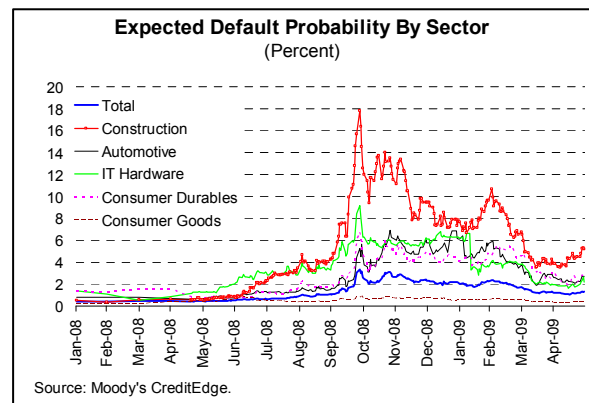
10. **Expected default probabilities are also in line with other countries in the region.** Korea is close to the Asian median in terms of its corporates' default probabilities.



⁴ For more background on contingent analysis, see Gray and Malone (2008).

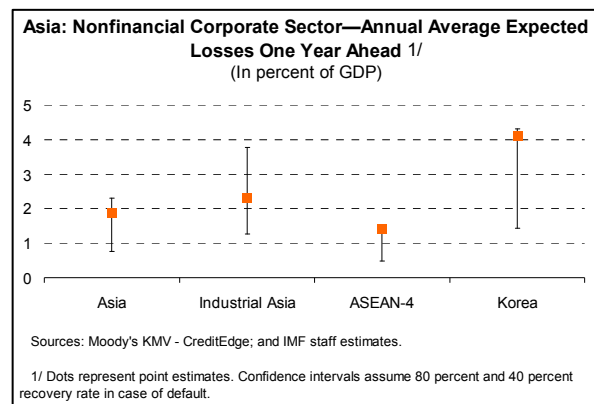
Korea's most vulnerable firms have a 14 percent probability of default, compared with 9 percent for Japan and 21 percent for the Philippines.

11. **Default risks differ widely across industries, in particular during times of stress.** In October, construction companies had an 18 percent probability of default, compared to 3 percent for the corporate sector as a whole. Other industries that exhibited above-average default probabilities were IT hardware (9 percent), consumer durables (7 percent), and automotives (6 percent). Industry differences have come down in line with default probabilities, but the default probability of construction companies remains at 5 percent and has been rising recently.



12. **The contingent claims analysis also allows the calculation of the value of expected losses from corporate default.** Expected default losses refer to the present value of expected losses that creditors would incur after the equity of defaulting companies' shareholders has been wiped out. Since this concept of expected losses excludes the cost to shareholders, it is best suited for international comparisons, or to derive the effect on a certain class of creditors, namely the banking system. It is also important to keep in mind that data coverage of the corporate sector is incomplete—20 percent of listed companies and all unlisted companies are excluded from the dataset—and, hence, the derived value of expected losses is a lower bound estimate.

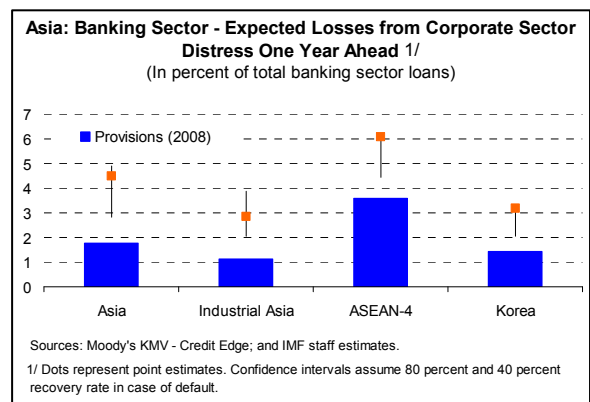
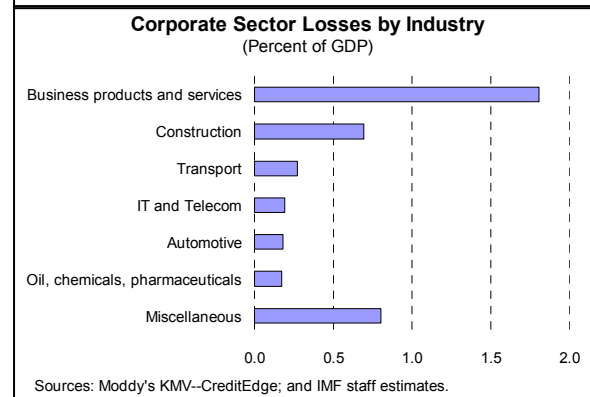
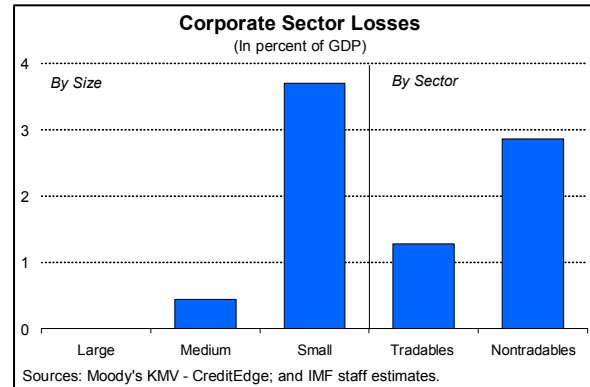
13. **Expected losses from corporate defaults are high by regional standards, but manageable.** According to the contingent claims analysis, Korean corporate creditors are expected to incur losses equivalent to 4.1 percent of GDP. This compares to 1.9 percent of GDP for Asia as a whole, 2.3 percent of GDP for industrialized Asia, and 1.4 percent of GDP for the ASEAN-4 countries. These loss calculations are based on historic recovery rates of nonperforming loans, which in the case of Korea are just above 40 percent. With recovery rates of 80 percent, Korean corporate losses could be cut to 1.4 percent of GDP. On the other hand, corporate losses are likely to be underestimated, given limited data coverage. The liabilities of companies covered in the contingent claims exercise amount to 65 percent of all corporate debt liabilities, as reported



in the more comprehensive flow of funds dataset. Adjusting corporate losses pro rata in line with flow of funds data, would raise baseline losses from 4.1 percent of GDP to 6.3 percent of GDP.

14. **The lion's share of corporate losses is expected to occur in the SME and nontradable sector.** Breaking down the sample of corporates by size shows that 3.7 percent of GDP in losses is expected on account of small companies, with the remainder attributable to medium-sized enterprises.⁵ Moreover, losses in the nontradables sector are estimated at 2.9 percent of GDP, compared to 1.3 percent of GDP of tradables sector losses. This is consistent with the high productivity differential between the tradables and nontradables sector. The contingent claims analysis also highlights the particular vulnerability of the construction sector, which accounts for 0.7 percent of GDP in losses. However, the business products and services sector seems most vulnerable with 1.8 percent of GDP in expected losses.

15. **The effect of corporate losses on the banking system also seems manageable. Korean banks' NPL ratio would increase from currently 1.6 percent to 3.2 percent on account of corporate defaults.** This compares to 4.5 percent for Asia as a whole, 2.8 percent for industrialized Asia, and 6.1 percent for the ASEAN-4 countries. To obtain these numbers the ratio of corporate losses over total corporate liabilities is multiplied with the outstanding stock of bank credit to



⁵ Company size is defined in line with footnote 3, but the conclusion does not change qualitatively if other size definitions are chosen. For example, breaking down the sample into three equal quantiles yields losses of 3.3 percent of GDP, 0.6 percent of GDP, and 0.2 percent of GDP for small, medium-sized, and large companies, respectively.

corporates (net of provisions). In Korea, where the bulk of bank loans is directed towards SMEs, which exhibit above-average default probabilities, such aggregate measures may underestimate the effect on bank balance sheets. However, using breakdowns for loans outstanding to SMEs and large corporates in combination with size-specific default probabilities, Korean banks' NPL ratio would still only rise to 3.6 percent. As a result, banks' capital adequacy ratio would fall to 12.1 percent, from 12.9 percent presently. Of course, banks are also exposed to highly leveraged households, the effect of which is not taken into account here.

D. Policy Implications

16. **While probably manageable, corporate weaknesses need to be addressed expeditiously to lay the foundations for a sound recovery.** The above analysis shows that corporate vulnerabilities are probably not big enough to cause tail events, such as a systemic banking crisis. Nevertheless, addressing the weaknesses through restructuring or liquidation would speed up the recovery by freeing up credit for viable enterprises. Moreover, the current crisis has merely laid bare structural weaknesses that have persisted for years, particularly in the SME sector, and could weigh on growth for years to come. Since the Asian crisis banks aggressively extended credit to SMEs, induced by low interest rates, generous public credit guarantees, and heavy deleveraging on the part of large corporations. However, easy access to credit did not translate into higher investment and profitability—partly reflecting low cost competition from China—and today, in contrast to pre-1998, SMEs trail large corporations on both accounts.

17. **Further improvements in the bankruptcy regime would help maximize the value of troubled firms.** The authorities have combined the three bankruptcy procedures for large companies, small companies, and individuals into one insolvency law and introduced a debtor-in-possession system in 2006. This has removed uncertainties, streamlined procedures, and increased the likelihood of timely action should problems emerge. However, there is further scope for shifting the balance of power from creditors to debtors to encourage a timely disclosure of business problems. First, the authorities could introduce an automatic stay, a provision where the debtor upon filing bankruptcy is given temporary protection from creditors. Second, the authorities could remove the requirement for prior court approval and give the bankrupt debtor an automatic right to submit a restructuring plan. Finally, personal bankruptcies should be decriminalized. Presently, there are over 100 provisions in various laws discriminating against bankrupt persons. In some cases, bankrupt individuals have to give up their professional licenses and are unable to open a bank account.⁶

⁶ See also IMF Country Report No. 06/381.

18. **However, out-of-court procedures for corporate restructuring and liquidation will also have an important role to play under the current circumstances.** While the corporate sector as a whole is in much better shape than during the Asian crisis, the SME sector is in worse condition. This sector is characterized by a large number of small firms that could overwhelm the court system. Hence, out-of-court procedures are key to a successful restructuring strategy.

19. **The authorities have stepped up an existing creditor-led restructuring program, but progress has been slow.** In 2004, the government started a creditor-led restructuring program for SMEs under the Creditor Bank Standing Council. Between mid-2004 and the first quarter of 2009, some 7,300 SMEs had been chosen for corporate restructuring under the program; out of those, half have been restructured, one quarter was liquidated, and the remainder is still under workout procedures. On top of this, banks have screened 861 SMEs since June 2009, of which 77 were found in need of restructuring and 36 were declared nonviable. This suggests that the screening process by banks may be too lenient, which is also born out by the disconnect between microeconomic and macroeconomic indicators of corporate health: Although close to half of SMEs have interest coverage ratios below 1, according to BOK, bankruptcies in the sector are falling since end-2008 and are now close to pre-crisis levels.

20. **For the creditor-led restructuring approach to be effective, incentives for creditors and debtors need to be aligned.**

- At present, banks are relatively immune to losses owing to collateral and public credit guarantees. It is estimated that 35 percent of SME loans are backed by collateral, while 11¼ percent are secured by public credit guarantees. Much of the remainder could be skewed towards healthy companies. Banks' disincentives to restructure ailing SMEs have been exacerbated recently. The funds for credit guarantees have been topped up and now account for 15 percent of outstanding SME loans. In addition, the maximum coverage of the guaranteed loan amount was raised from 85 percent to 100 percent, thereby completely eliminating any credit risk for banks.
- The recently established bank recapitalization fund and the toxic asset fund further weaken banks' incentives to push for corporate restructuring. Corporate restructuring, and in particular SME restructuring, is a lengthy and uncertain process, that requires much expertise on the part of banks. Hence, banks often prefer to sell their NPL to public asset management companies or wait for the government to recapitalize them. While the government has linked access to the recapitalization fund, and associated interest costs, to restructuring efforts, it is giving mixed signals by also linking it to SME credit extension. In the case of NPL purchases, the workout intermediary, that is the Creditor Financial Institutions Steering Committee, could certify the eligible banks for the sale of NPLs to the Korea Asset Management Corporation.

- SME owners must face the risk of being worse off without restructuring to agree to painful restructuring measures. This usually requires the real threat of liquidation and a strong bankruptcy regime. While Korea has a strong bankruptcy regime—in fact, liquidating a business in Korea is cheaper than in the OECD, on average, and takes about the same amount of time—various government support schemes have greatly reduced the incentives of SMEs to restructure. The most dramatic step in this respect has been the recent blanket rollover of SME debt falling due in 2009, amounting to about 16 percent of GDP.

21. **An effective restructuring approach for small SMEs does not exist, but the case for blanket support is not compelling.** The costs of restructuring small SMEs exceed the benefits; in this sense, credit to small SMEs is equivalent to credit to households. This leaves as policy choices either blanket support, such as across-the-board debt relief and maturity extension, or laissez-faire. Blanket support could be economical if SMEs were merely hit by a liquidity shock that threatened to bring down otherwise viable companies. However, SME profitability has been on a secular decline since long before the current crisis. Moreover, the current global downturn could be protracted and little would be won by postponing the demise of nonviable SMEs to next year. In fact, keeping nonviable SMEs afloat could further delay the recovery, in particular, as global financing conditions are projected to remain tight and financing of nonviable SMEs would come at the expense of viable SMEs. There is, of course, a social dimension to supporting SMEs, given their share in employment, but targeted social transfers for those out of work seem a much better use of public funds than blanket guarantees to the entire sector.

22. **Large corporates lend themselves to market-led restructuring, if they are viable.** Their size and intangible assets can make restructuring very rewarding and usually attracts a wide range of strategic investors, including private equity firms, venture capitalists, foreign competitors, or junk bond funds. The role for the government in this kind of restructuring is to liberalize FDI regimes and create an enabling tax environment by exempting mergers, stock sales, or other financial transactions associated with the restructuring from capital gains taxes. Korea has taken these steps already during the Asian crisis and has, more broadly, led the way in market-friendly restructuring through the creation of Corporate Restructuring Companies, Corporate Restructuring Vehicles, and Corporate Restructuring Funds.

23. **In summary, Korea is likely to withstand this shock to the corporate sector and should grasp the opportunity to overhaul its frail SME sector.** The Korean economy has been hit by an external shock that, on several dimensions, is larger than the shock of the Asian crisis. However, the Korean economy has been in a much stronger position than at the outset of the Asian crisis, thus, limiting the shock's impact both on the corporate and banking sector. The SME sector does exhibit significant weaknesses, which while not of a systemic nature, could inhibit a fast and sound recovery. However, as with the Asian crisis for the chaebols, this crisis could become the catalyst for a long overdue restructuring of SMEs and

with its history and expertise in corporate turnarounds, Korea is placed like few others to make it happen.

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